Beaver Creek Wild Trout Survey

Beaver Creek Wild Trout Enhancement Projects

- Doug Hutzell, Project Coordinator, Beaver Creek Watershed Association
- John Mullican, Maryland DNR Fisheries
- Susan Rivers, Maryland DNR Fisheries

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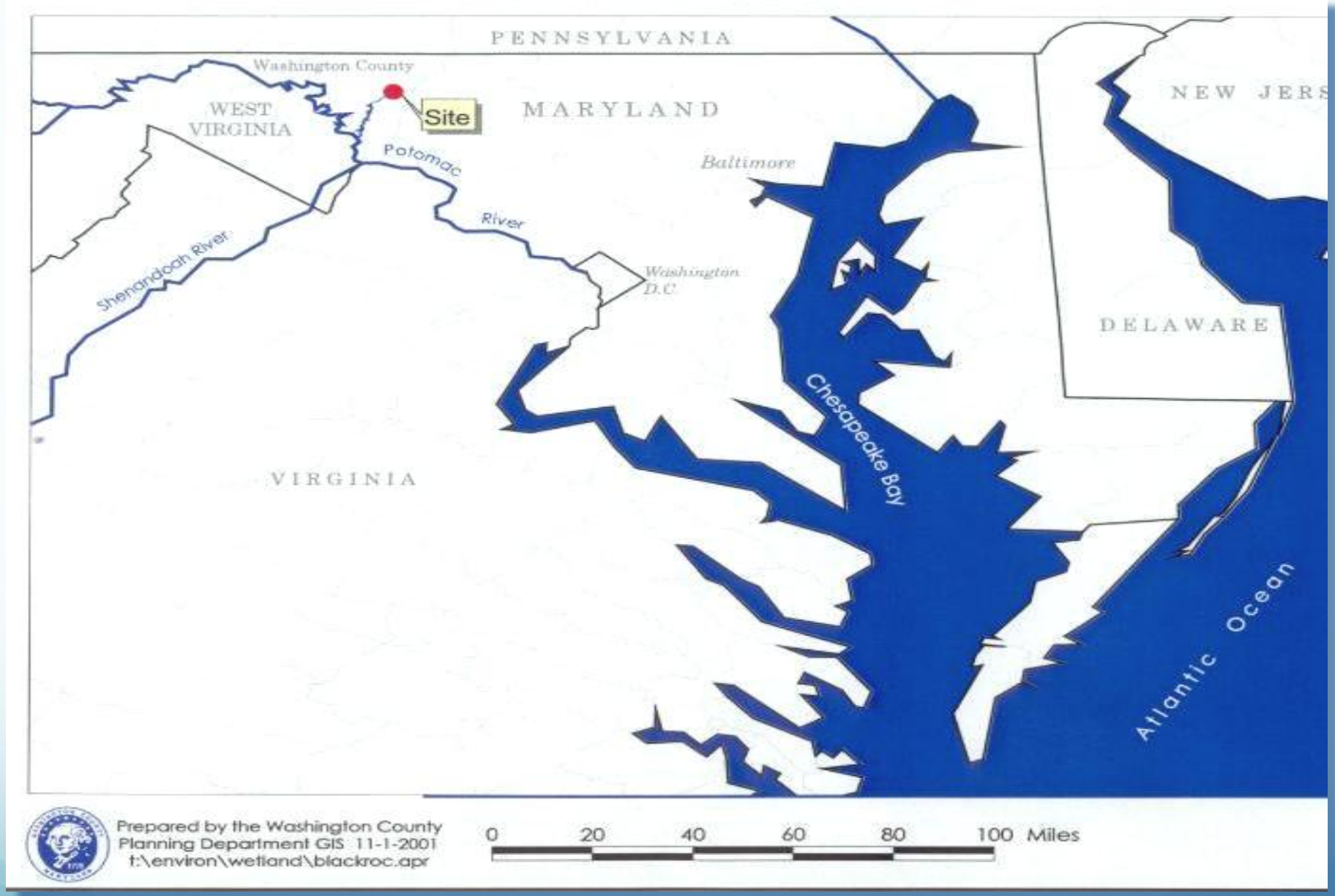

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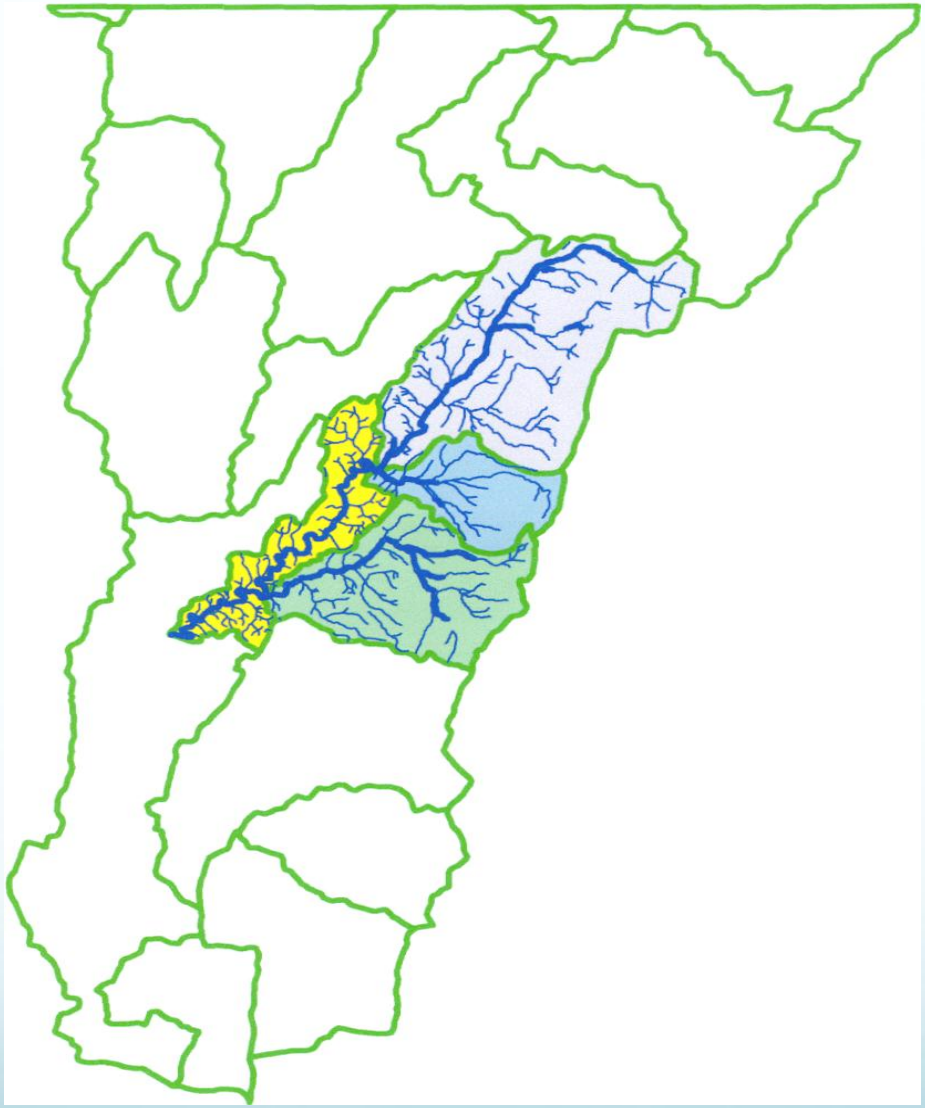
- Antietam Watershed



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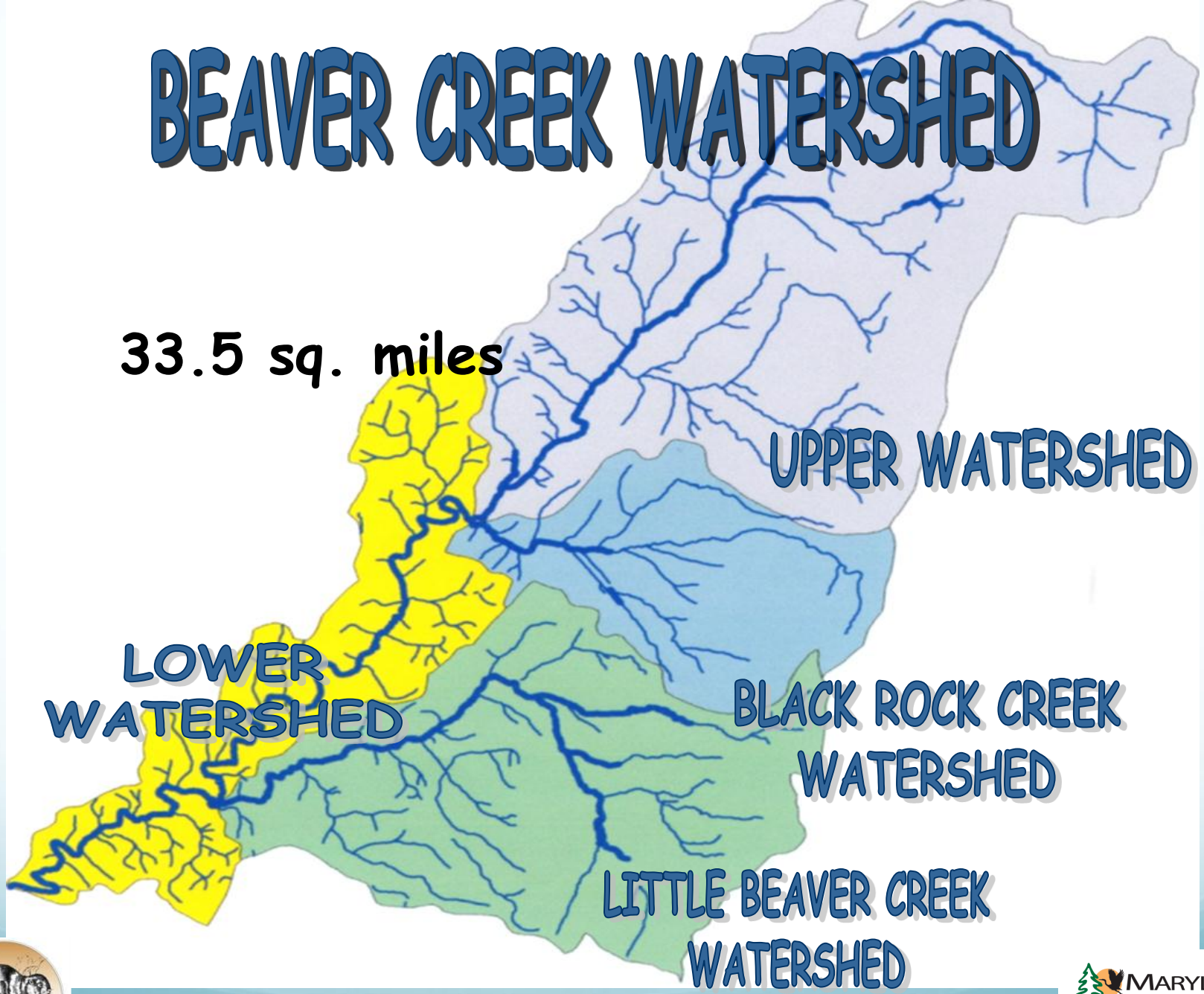

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Agriculture BMP's were needed

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Farm field without ripairan buffer

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Mowing along stream banks

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Macro invertebrate Sampling

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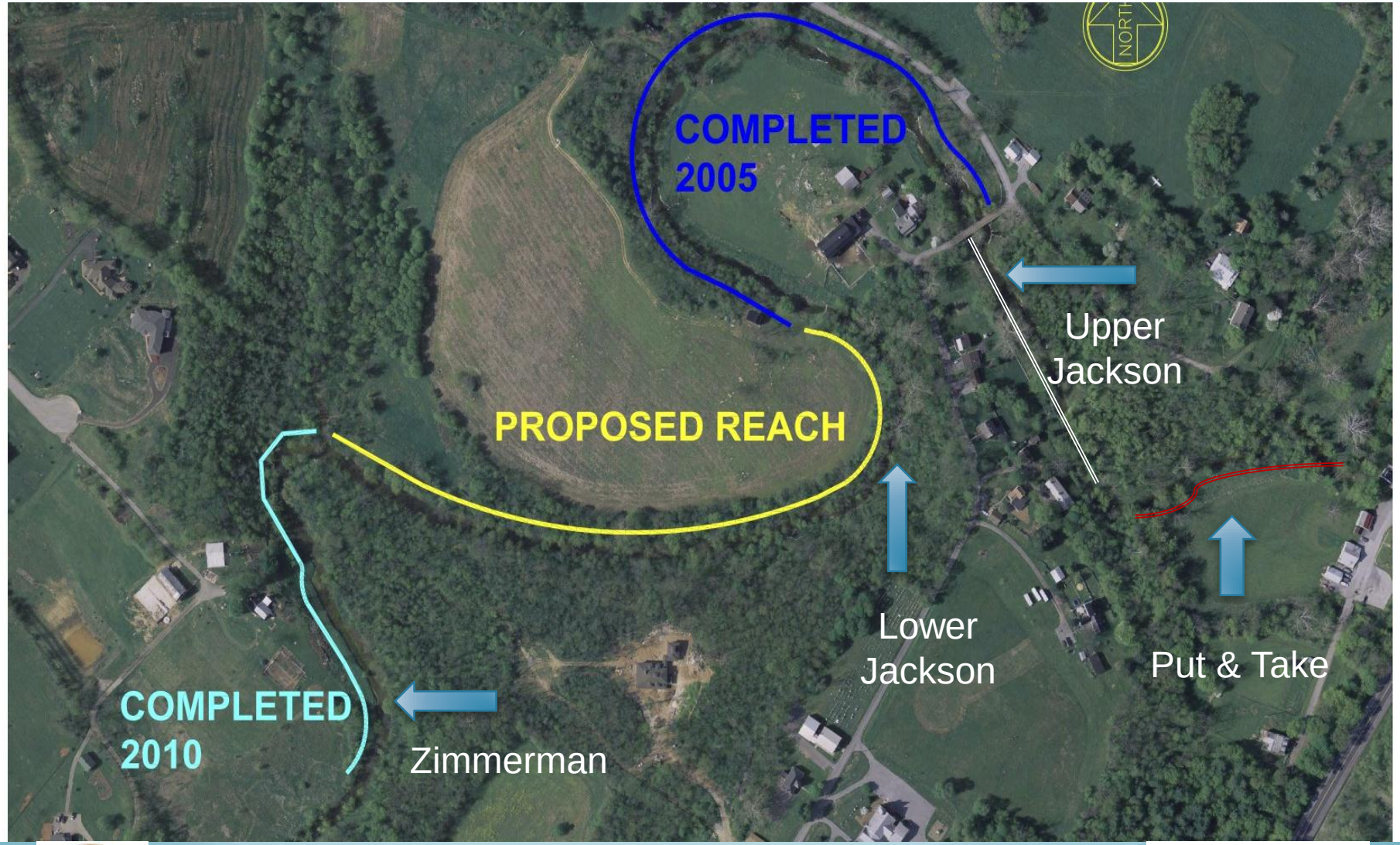
Survey Sites on Beaver Creek



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Data Comparison for macro-invertebrates for Beaver Creek station at Zimmerman's – 2010 - 2011

Data measure	2011 data	2010 data
Fisheries Data measures		
Richness	19 moderately impacted	17 moderately impacted
HBI	5.41 fair	6.29 good
Scraper filterer ratio	0.19	0.9
EPT # specimens	30	33
# taxa	7 slight impact	6 slight impact
EPT/C	2.72	0.3
Dominant family	27.2% Simulidae	56.1% Chironomidae
CPOM	0.23	0.08
Diversity	3.38 some impacts	2.67 some impacts
Equitability	0.79 few impacts	0.69 few impacts

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MBSS Measures Combined Highlands	2011	2010
Number of taxa	19 (3)	17 (3)
Number of EPT taxa	7 (1)	6 (1)
Number of Ephemeroptera taxa	2 (1)	3 (3)
% intolerant urban	6.5 (1)	2.5 (1)
% Tanytarsini	0 (1)	0 (1)
% scrapers	6.6 (3)	4.5 (3)
% swimmers	8.1 (3)	10.1 (3)
% Diptera	36.7 (1)	58.1 (1)
IBI score	1.75 very poor	2.0 poor

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Incorporating more wood in structures

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Zippin Depletion survey methodology

- Sampling stations are selected to include all the habitat types present in the stream reach to be surveyed (pool, riffle, run, etc.).
- The total length and width of the station are then measured to the nearest tenth of a meter. Stream surface area is computed and expressed in hectares.
- Fish populations are estimated using the three pass regression technique ($P < 0.05$) outlined by Zippin (1958).

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- Fish are collected using dip nets and a Smith-Root backpack electrofishing unit (LR-24, Model 12-A POW) or a Smith-Root barge/bank mounted electrofishing unit (1.5KW or 2.5 GPP).
- The survey begins at the downstream end of the station and three electrofishing passes are made through the entire station.
- During each pass all the trout are collected and placed in a separate float box. The relative abundances of non-game species are observed and recorded.

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- Observed abundance estimate is expressed as scarce (< 5 individuals), common (5-100 individuals) or abundant (> 100 individuals).
- All trout are anesthetized with a 1:10 solution of clove oil and ethanol alcohol, identified to the species level, measured for total length to the nearest millimeter, weighed to the nearest gram, and returned alive to the stream at the end of the survey.

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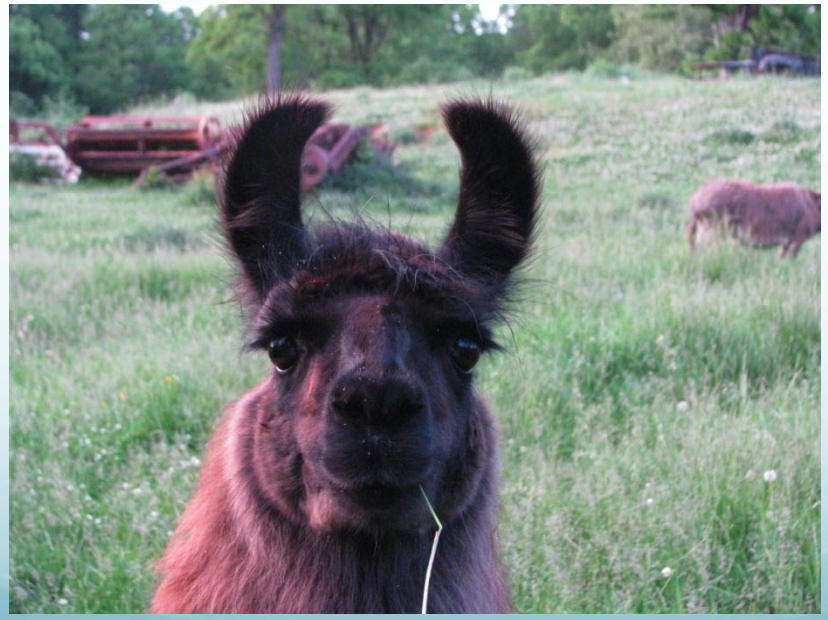
- Population estimates for each species collected are made using the MICROFISH 2.2 software package (Van Deventer and Platts 1985). The coefficient of condition factor (K) is used to assess physical condition for trout species (Lagler 1952). Statistical analyses of population means are interpreted as described in Motulsky (2003).



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Survey Team

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Start Time: 12:30pm
Stop Time: 2:30pm
Duration: 2 shockers

Stop Lat.:
Stop Long.:
Weather:

Pulses:
% Range:
Gear: mode 124 South Run

Alk: 3g
Hard: 19g

R	Bn	Bk	Length	Weight	R	Bn	Bk	Length	Weight	R	Bn	Bk	Length
			Run #3					Run # 1					
✓	hatch		380	625		YOY		80, 71, 84	86, 74, 81				
	✓		357	527	YOY			73, [illegible]					
	✓		188	69		YOY		75, 76, 71,	75, 71,				
	✓		200	85	✓	hatch		349	444				
	✓		219	112	✓	hatch		310	279				
	✓		203	89	✓			277	241				
	✓		201	84	✓	hatch		278	209				
	✓		211	103	✓			275 #	212				
	✓		214	94	✓			256	177				
	✓		178	60	✓			258	163				
	✓		216	96		✓		310	315				
	✓		216	96		✓		300	292				
	YOY		68			✓		317	350				
						✓		310	286				
			Run #2			✓		314	320				
✓	hatch		459	1153		✓		300	273				
✓	hatch		350	414		✓		410	756				
✓			362	497		✓		305	271				
✓	hatch		372	549		✓		320	308				
	✓		256	162		✓		242	151				
	✓		221	102		✓		236	122				
	✓		255	157		✓		181	58				
	✓		211	96									
	✓		223	105									
	✓		145	28									
	✓		190	67									
	YOY		70										

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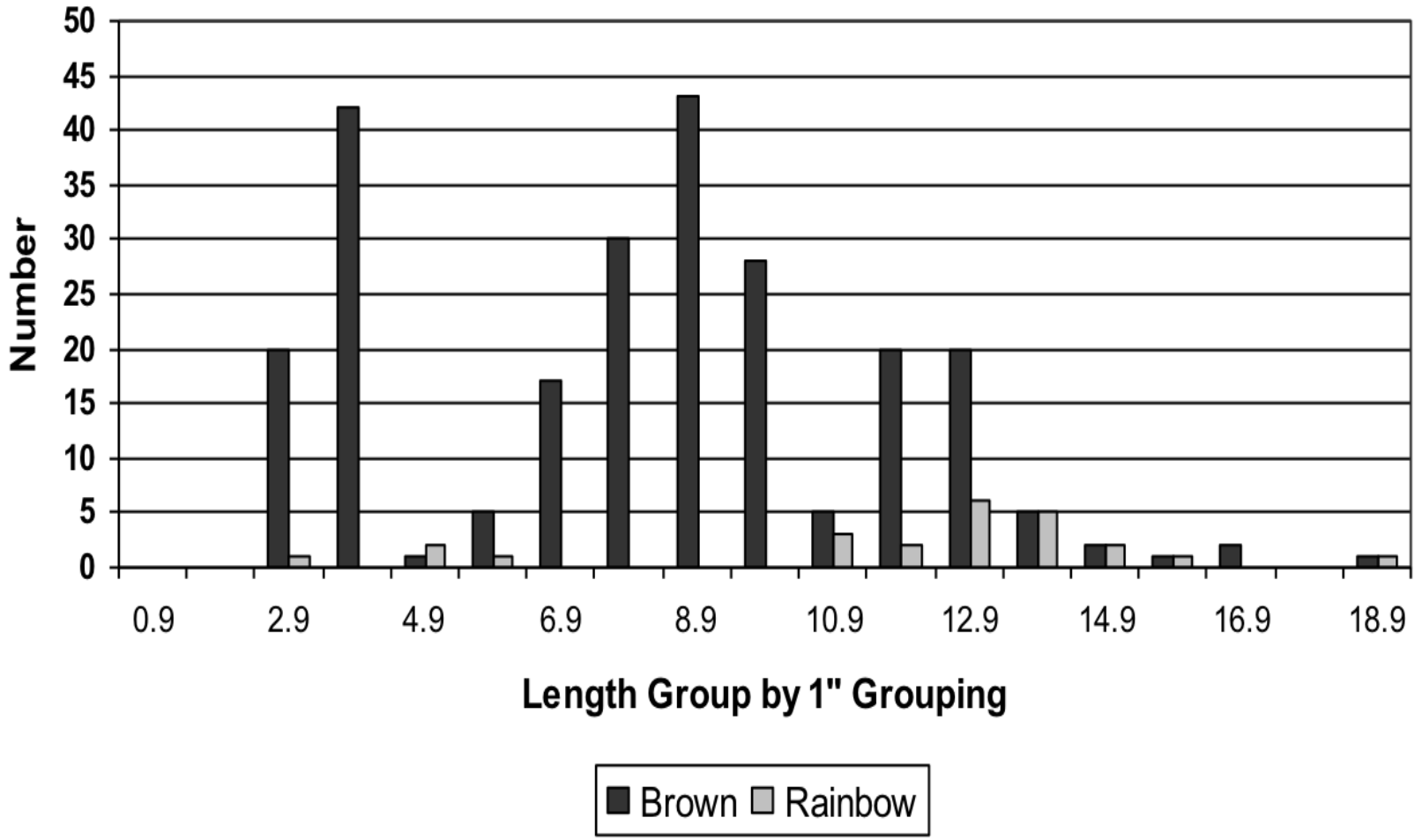
Length Frequency of Brown and Rainbow Trout
Beaver Creek 2011



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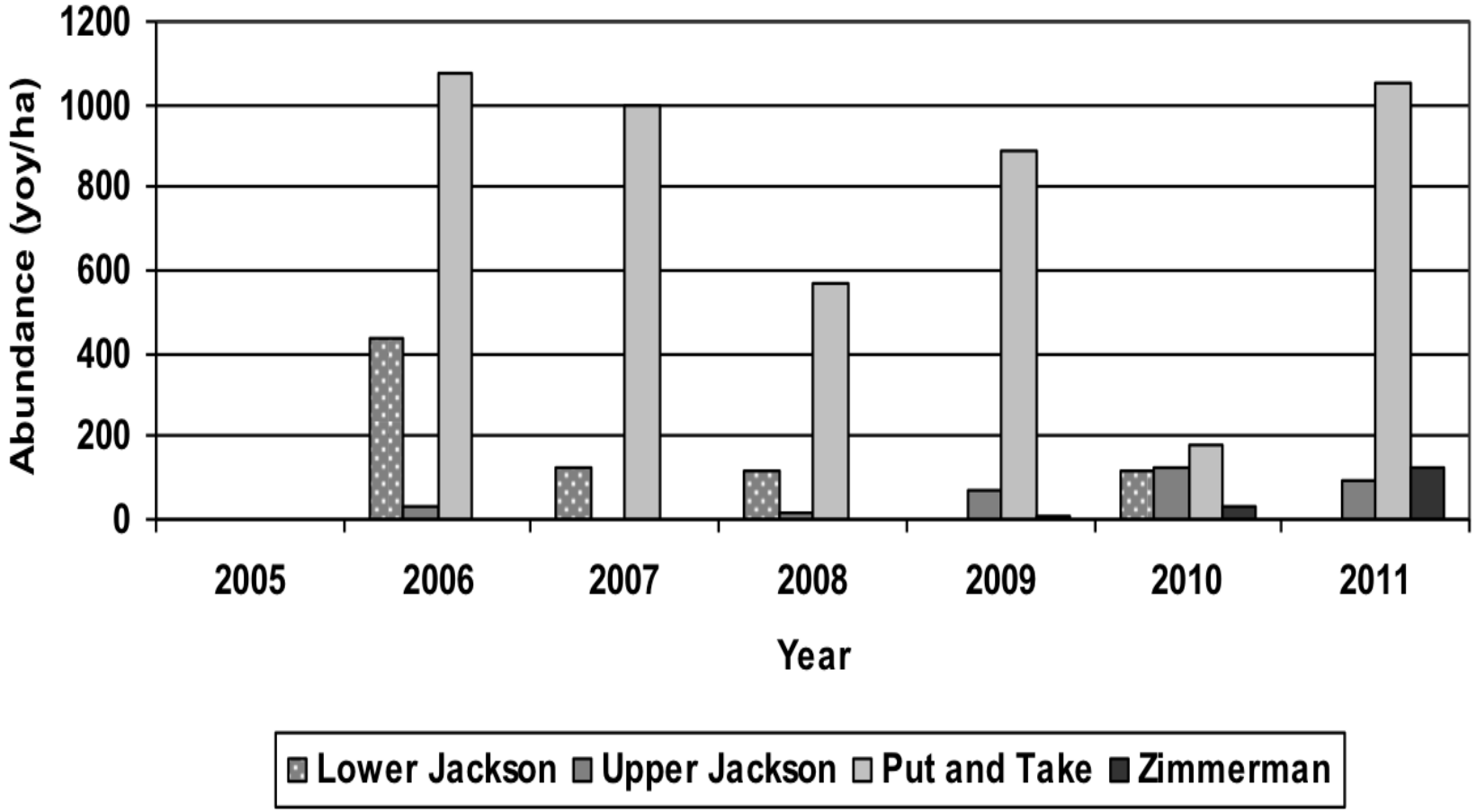
Young-of-Year Brown Trout Abundance
Beaver Creek 2005 - 2011



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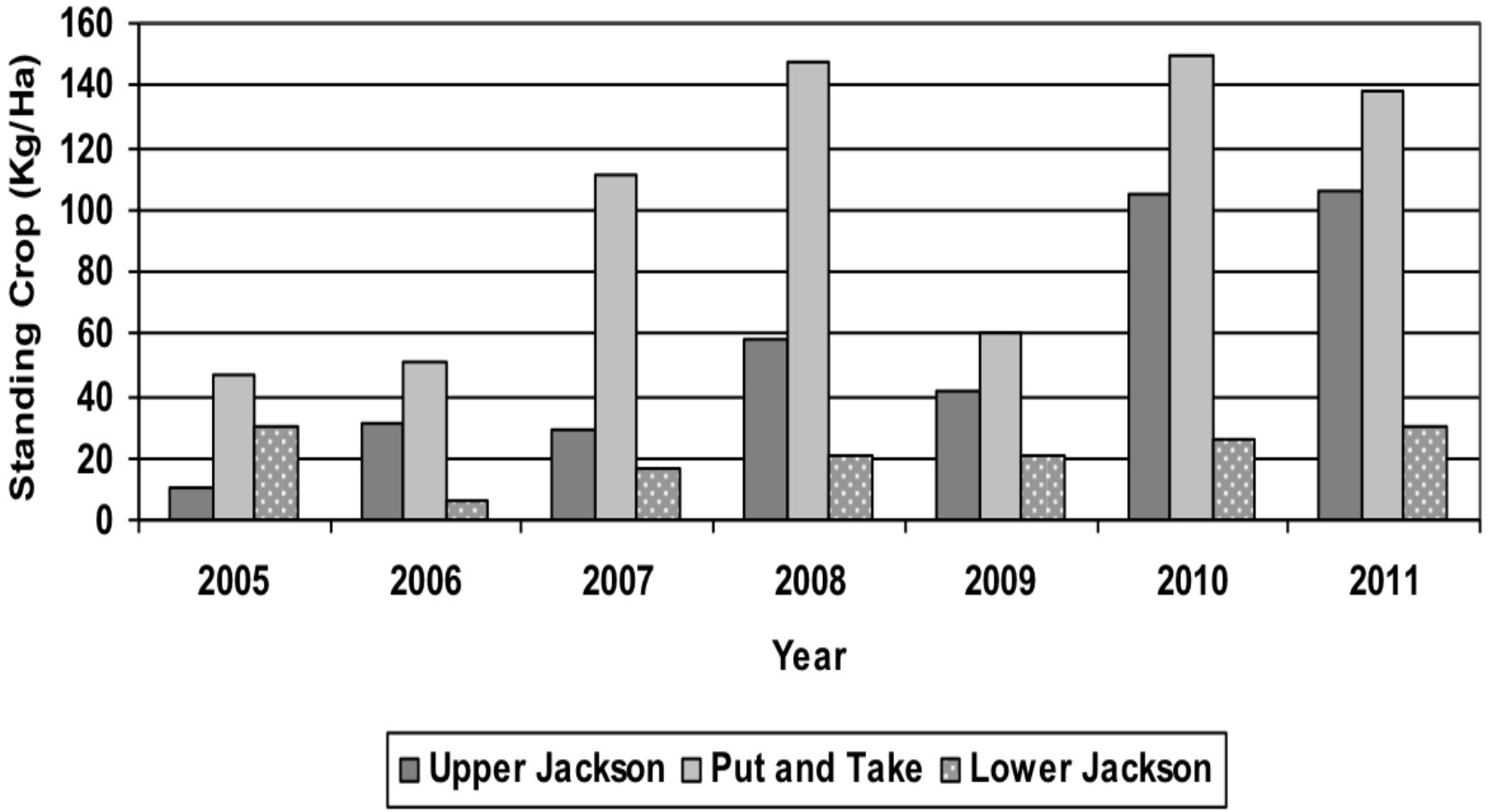
Adult Brown Trout Standing Crop
Beaver Creek 2005 - 2011



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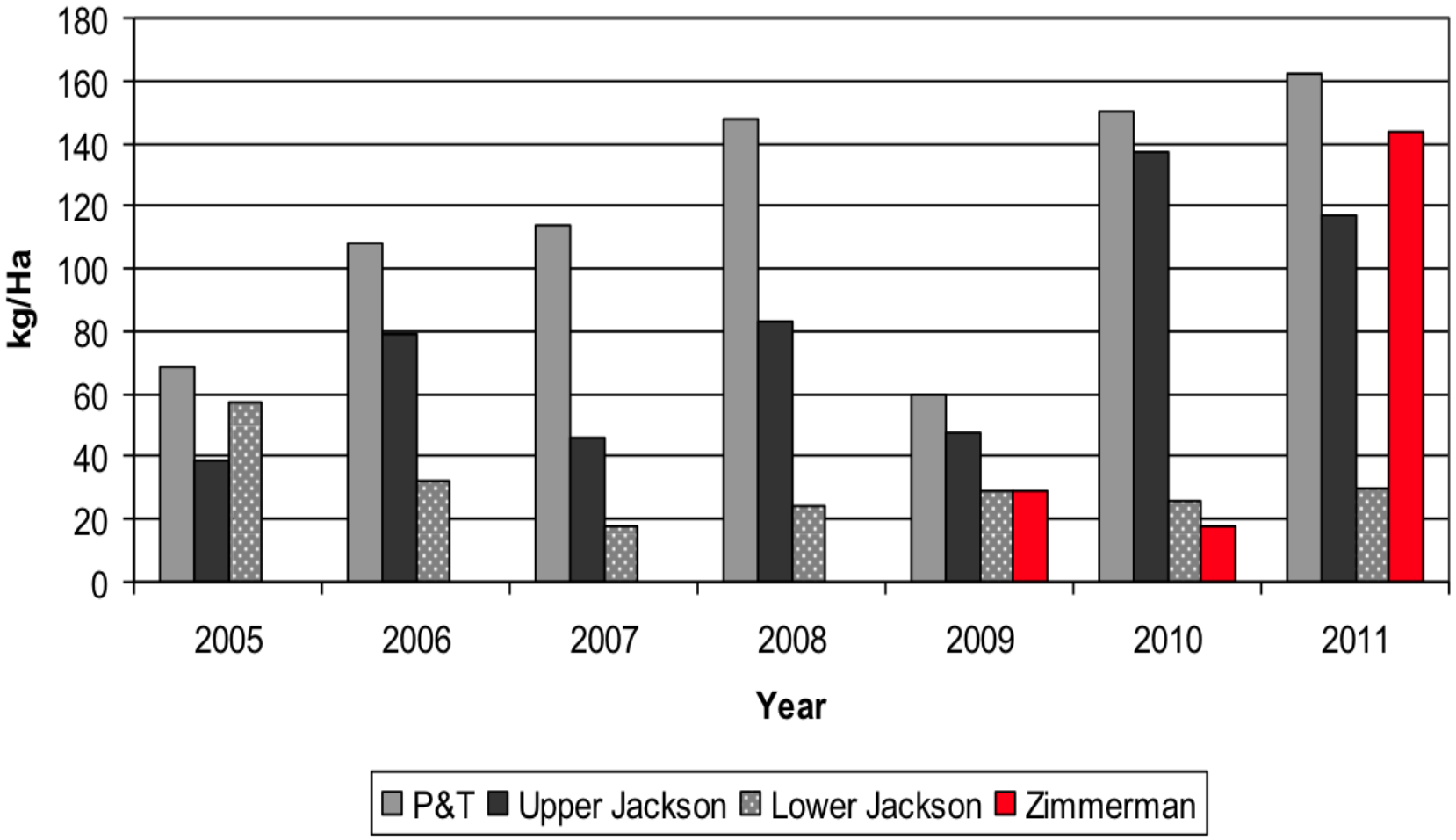
Total Adult Trout Biomass
Beaver Creek 2005 - 2011



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Spawning trout Redd

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Conclusion

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